

**In the Claims:**

Please amend claims 1, 3-6, 8, 10-15 and 17-20. Please add new claims 21-30.

The claims are as follows:

1. (Currently Amended) A software system for verifying an integrated circuit design, said system comprising:

~~an I/O controller connected to one or more I/O cores, said I/O cores part of said~~  
~~integrated circuit design;~~

an external memory mapped test device having a switch ~~for selectively connecting~~  
~~programmably connectable to one or more of said I/O cores to corresponding I/O driver models~~  
~~and to a simulated I/O controller, said I/O driver models connected to corresponding simulated~~  
~~I/O cores by corresponding virtual I/O buses;~~

a virtual memory bus ~~for transferring signals between connecting~~ said I/O controller and  
said switch; and

wherein said I/O cores and said I/O controller are software descriptions of said integrated  
circuit design ~~a test operating system for controlling said switch.~~

2. (Original) The system of claim 1, wherein said external memory mapped test device and said switch are distributed among a plurality of external memory mapped test device modules, each module containing a portion of said switch and connected to one of said I/O driver models.

3. (Currently Amended) The system of claim 1, wherein said external memory mapped test device further includes an address register ~~for setting said switch and controlling said I/O driver models.~~
4. (Currently Amended) The system of claim 1 wherein said integrated circuit design further includes an embedded processor ~~for running said test operating system.~~
5. (Currently Amended) The system of claim 2, wherein each said external memory mapped test device module further includes an address register ~~for setting said portion of said switch and controlling said one I/O driver model.~~
6. (Currently Amended) The system of claim 2, wherein said integrated circuit design further includes an embedded processor ~~for running said test operating system.~~
7. (Original) The system of claim 1, wherein said external memory mapped test device and said switch are distributed among a plurality of external memory mapped test device modules, each module containing a portion of said switch and connected to one of said I/O driver models and further including an additional external memory mapped test device module directly connected to one or more additional I/O driver models, each additional I/O driver model directly connected to an additional I/O core, each additional I/O core part of said integrated circuit design.
8. (Currently Amended) A software method for verifying an integrated circuit design, the method comprising:

~~providing an I/O controller connected to one or more I/O cores, said I/O cores part of said integrated circuit design;~~

providing an external memory mapped test device software module having a switch for ~~selectively connecting~~ programmably connectable to one or more of said I/O cores to corresponding I/O driver models and to a simulated I/O controller, said I/O driver models connected to corresponding simulated I/O cores by corresponding virtual I/O buses;

providing a virtual memory bus ~~for transferring signals between~~ connecting said I/O controller and said switch;

~~providing a test operating system for controlling said switch; and~~  
programming connections of said external memory mapped test device and connections of a general purpose I/O core to said I/O models;

wherein said I/O cores, said general purpose I/O core and said I/O controller are software descriptions of said integrated circuit design; and

simulating said integrated circuit design by running a test case on said test operating system with said programmed connections.

9. (Original) The method of claim 8, further including:

distributing said external memory mapped test device and said switch among a plurality of external memory mapped test device modules, each module containing a portion of said switch and connected to one of said I/O driver models.

10. (Currently Amended) The method of claim 8, further including:

providing said external memory mapped test device with an address register ~~for~~ and  
setting said switch and controlling said I/O driver models using address information programmed  
into said address register.

11. (Currently Amended) The method of claim 8 further including:

providing an embedded processor in said integrated circuit design, said embedded  
processor ~~for~~ running said test operating system controlling said software.

12. (Currently Amended) The method of claim 9, further including:

providing each external memory mapped test device ~~module~~ with an address register ~~for~~;  
and

setting ~~said~~ each portion of said switch and controlling ~~said one~~ each I/O driver model  
using address information programmed into said address register.

13. (Currently Amended) The method of claim 9, further including:

providing ~~each~~ said integrated circuit design with an embedded processor; ~~and~~  
~~for~~ running said test ~~operating system~~ case on said embedded processor.

14. (Currently Amended) ~~The method of claim 8, further including~~ A method for verifying an  
integrated circuit design comprising:

providing an I/O controller connected to one or more I/O cores, said I/O cores part of said  
integrated circuit design;

providing an external memory mapped test device having a switch for selectively connecting one or more of said I/O cores to corresponding I/O driver models;  
providing a bus for transferring signals between said I/O controller and said switch;  
providing a test operating system for controlling said switch;  
simulating said integrated circuit design by running a test case on said test operating system;

distributing said external memory mapped test device and said switch among a plurality of external memory mapped test device modules, each module containing a portion of said switch and connected to one of said I/O driver models: and

providing an additional external memory mapped test device module directly connected to one or more additional I/O driver models, each additional I/O driver model directly connected to an additional I/O core, each additional I/O core part of said integrated circuit design.

15. (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for verifying an integrated circuit design, said method steps comprising:

~~providing an I/O controller connected to one or more I/O cores, said I/O cores part of said integrated circuit design;~~

providing an external memory mapped test device software module having a switch for selectively connecting programmably connectable to one or more of said I/O cores to corresponding I/O driver models and to a simulated I/O controller, said I/O driver models connected to corresponding simulated I/O cores by corresponding virtual I/O buses;

providing a virtual memory bus for transferring signals between connecting said I/O controller and said switch;  
providing a test operating system for controlling said switch; and  
programming connections of said external memory mapped test device and connections of a general purpose I/O core to said I/O models;  
wherein said I/O cores, said general purpose I/O core and said I/O controller are software descriptions of said integrated circuit design; and  
simulating said integrated circuit design by running a test case ~~on said test operating system with said programmed connections.~~

16. (Original) The program storage device of claim 15, said method steps further including:

distributing said external memory mapped test device and said switch among a plurality of external memory mapped test device modules, each module containing a portion of said switch and connected to one of said I/O driver models.

17. (Currently Amended) The program storage device of claim 15, said method steps further including:

providing said external memory mapped test device with an address register ~~for~~; and  
setting said switch and controlling said I/O driver models using address information programmed into said address register.

18. (Currently Amended) The program storage device of claim 15, said method steps further including:

providing an embedded processor in said integrated circuit design, said embedded processor for running said test operating system controlling said software.

19. (Currently Amended) The program storage device of claim 16, said method steps further including:

providing each external memory mapped test device ~~module~~ with an address register ~~for~~;  
and

setting said each portion of said switch and controlling ~~said one~~ each I/O driver model  
using address information programmed into said address register.

20. (Currently Amended) The program storage device of claim 16, said method steps further including:

providing ~~each~~ said integrated circuit design with an embedded processor; ~~and~~  
for running said ~~test operating system~~ test case on said embedded processor.

21. (New) The system of claim 1, wherein said one or more I/O cores are independently selected from the group consisting of 1394 I/O cores, universal asynchronous receiver transmitter cores, serial cores, and general purpose I/O cores.

22. (New) The system of claim 1, wherein said integrated circuit design further includes an embedded processor core, a memory controller core and a direct memory access core.

23. (New) The system of claim 22, further including a direct memory access core model of said a direct memory access core.

22. (New) The method of claim 8, wherein said one or more I/O cores are independently selected from the group consisting of 1394 I/O cores, universal asynchronous receiver transmitter cores and serial cores.

25. (New) The method of claim 8, wherein said integrated circuit design includes an embedded processor core, a memory controller core and a direct memory access core.

26. (New) The method of claim 26, wherein said integrated circuit design includes a direct memory access core model of said a direct memory access core.

27. (New) The program storage device of claim 15, wherein said one or more I/O cores are independently selected from the group consisting of 1394 I/O cores, universal asynchronous receiver transmitter cores and serial cores.

28. (New) The program storage device claim 15, wherein said integrated circuit design includes an embedded processor core, a memory controller core and a direct memory access core.

29. (New) The program storage device of claim 27, wherein said integrated circuit design includes a direct memory access core model of said a direct memory access core.



30. (New) The method of claim 8, further including:

distributing said external memory mapped test device and said switch among a plurality of external memory mapped test device modules, each module containing a portion of said switch and connected to one of said I/O driver models; and

connecting an additional external memory mapped test device module directly to one or more additional I/O driver models and directly connecting each additional I/O driver model to an additional I/O core, each additional I/O core part of said integrated circuit design